



**NPA no. 05/2016**

**CAR PART IV - SPECIAL PURPOSE OPERATIONS  
SECTION E - BALLOONING REGULATIONS**

**Release Date: 12<sup>th</sup> April 2016**

The GCAA has recently conducted a review of CAR PART IV - SPECIAL PURPOSE OPERATIONS - SECTION E BALLOONING REGULATIONS.

The review concluded the need for a revised regulation to be introduced in order to regulate the ballooning activities and a consolidation of the regulation and CAAP, considering Accident Investigation Report, and best practices.

The proposed initial entry into force date of the amendment is April 2016.

This notice is published to announce to the public this amendment and to entitle all concerned parties to:

1. Review the attached proposed regulation; and
2. Submit their comments online through the GCAA website within 30 days from the date of this NPA.

Comments must be submitted through the GCAA Website – E-Publication – Notice of Proposed Amendment, using the Action of “Submit NPA Feedback Request.”

Comments and Responses may be viewed in the Comments Response Document CRD pertaining to this NPA on the GCAA website.

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## SUB SECTION 1. APPLICABILITY

### 1.1 GENERAL

- 1.1.1 Ballooning operations within the U.A.E. shall be conducted in accordance with the regulations set forth in this CAR Part IV Sub-Section E.
- 1.1.2 This Sub-Section prescribes rules governing the commercial operation of manned or unmanned, free or tethered balloons by an organization or operator approved by the GCAA unless for event that is organized and authorized for a flying display, refer to CAAP 15 Flying Display.
- 1.1.3 For the purposes of this Sub-Section, a balloon is an aircraft, which is capable of free flight or tethered that:
- (a) is used or intended to be used for manned operation in the air; and
  - (b) is used or intended to be used for recreation or sport purposes; or
  - (c) is used or intended to be used on commercial operations under an Air Operator's Certificate.

Note: non-commercial operations of balloons are covered under CAR Part II Chapter 10 – LSA.

### 1.2 DEFINITIONS

In this Sub-Section, the following definitions apply:

- Aerodrome:** means a take-off and/or landing site which meets the physical specifications required for the safe operation of a balloon.
- ATS:** means Air Traffic Service
- Balloons:** is a lighter than air aircraft, that is not engine driven, and that sustains flight through the use of gas buoyancy or heated air.
- Basket:** means the container suspended beneath the envelope, mainly used for the balloon occupants.
- Category:** means either free or tethered balloon
- Class:** Means Hot air balloon Gas filled balloon Pressurized balloon Combination gas and hot air balloon
- Envelope:** means the enclosure in which the lifting medium is contained.
- Free Balloon:** means an un-tethered balloon.
- GCAA:** means General Civil Aviation Authority
- Hot Air Balloon:** means a balloon that derives its lift from heated air.
- Manned Balloon:** means a non-power driven lighter-than-air aircraft capable of carrying one or more persons and equipped with controls to permit the pilot to control the altitude of the aircraft.
- Maximum Mass:** means the design maximum mass of the balloon, Less the lifting gas or air.
- Organisation:** means either the holder of an Air Operator's Certificate Balloons, or a non-commercial sporting group, registered with the UAE authorities and approved by the GCAA to conduct ballooning operations.

**Tethered Balloon:** means a manned balloon which is tethered to the Surface.

### **1.3 APPROVED ORGANIZATION**

- 1.3.1 Balloon operations shall only be conducted by an organization approved by the GCAA.  
Balloons operated for the purpose of Commercial Operations shall operate in accordance with the Regulations provided in CAR Part III and this section. Operators of these aircraft are required to hold an Air Operator's Certificate (AOC) and Operation Specifications issued by the GCAA.
- 1.3.2 The approved organization shall nominate a person(s) responsible for all balloon operations conducted under their AOC.
- 1.3.3 The organization shall have sufficient experienced pilots, including instructors for all category, class and types of balloons operated,
- 1.3.4 The organization shall ensure operations are in compliance with this Sub-Section and publish, in a GCAA approved Operations Manual, all requirements, procedures and instructions necessary to ensure the safe operation of balloons.
- 1.3.5 The organization shall maintain flying records for each pilot.
- 1.3.6 The organization shall ensure that a maintenance logbook is maintained in accordance with CAR Part V Chapter 5.
- 1.3.7 Organisation approved to carry passenger shall record the passenger information and contact details.

#### **AMC to 1.3.1**

Balloon operations approval should be made through GCAA online applications, <https://www.gcaa.gov.ae/en/pages/register.aspx>

#### **GM to 1.3.1**

The AOC process can be found in CAAP 8 AOC.

#### **AMC to 1.3.2**

The person(s) nominated to be responsible for the conduct of all balloon operations varies from single to multiple balloon operations, as minimum for single balloon operations, at least one person accountable for operation and some other element may be subcontracted.

As minimum should have the responsibilities:

- a) Accountable manager
- b) Flight operations
- c) Ground operations
- d) Crew training
- e) Continuing Airworthiness
- f) Quality
- g) SMS

For those who operate 2 or less balloons or 20 or less employees, the minimum should have 3

persons and for those who operate more than 2 balloon or more than 20 employee should have minimum of 4 person (covering the managerial positions above).

#### **GM to 1.3.2**

The combination of post holders may be combined within the following area of expertise:

- (a) Accountable which may combined with Flight operations, Ground Operations and or Training
- (b) Accountable which may combined with Airworthiness

#### **AMC to 1.3.3**

The instructor or examiner should have previous experience either locally trained or foreign previous experience, the Examiner may be a subcontracted examiner acceptable to the GCAA, typically from the large balloon organization recognized by international balloon organization / club or manufacture pilot.

### **1.4 INSPECTION AND TRAINING REQUIREMENTS**

- 1.4.1 Any person operating a balloon under this Sub-Section shall, upon request, allow the GCAA, or his designee, to inspect any facility, documentation or equipment used for the operation, transportation, maintenance or construction of balloons to determine the applicability of this Sub-Section.
- 1.4.2 The pilot or operator of a balloon shall, upon request of the GCAA, furnish satisfactory evidence that the balloon is subject only to the provisions of this Sub- Section.
- 1.4.3 Inspectors are authorized to inspect and fly in the operator's balloon for the purpose of inspection at any time.
- 1.4.5 Operators shall be required, upon formal request, to provide initial training to the GCAA Inspectors on an as-required basis.

### **1.5 CERTIFICATION AND REGISTRATION**

- 1.5.1 Pilots of balloons capable of free flight shall hold the appropriate licence as required by CAR Part II. For a tethered balloon, the pilot does not have to be licensed, however the pilot shall have been trained by manufacturer or by the operator as acceptable to the GCAA.
- 1.5.2 Operators of balloons shall, where and as applicable, establish and maintain communication with applicable ATSU/ATC for their operations.
- 1.5.3 Balloons are required to be registered and shall be issued with registration identification marking by the GCAA.
- 1.5.4 An Operator of a balloon shall hold a current insurance policy for third party personnel and property damage liability as per applicable GCAA Information Bulletin.

## **SUB SECTION 2. OPERATING RULES**

### **2.1 GENERAL**

- 2.1.1 No person shall operate a balloon unless under the direct control of a GCAA approved organization and in accordance with the Operations Manual of that organization.
- 2.1.2 The minimum age to fly as pilot in command is 18 years.
- 2.1.3 No organization or person shall conduct a ballooning operation without the No objection of the Department of Civil Aviation of the Emirate concerned and the Non Objection from the UAE Armed Forces / GHQ,
- 2.1.4 No organization or person shall conduct a ballooning operation over or in a populated area without the approval of the appropriate municipality.
- 2.1.5 No organisation or person shall operate a balloon unless it is in accordance with the CARs Part III, this regulations and the UAE Aeronautical Information Publication (AIP). Flights conducted in controlled airspace shall be operated in accordance with an Air Traffic Control clearance.

### **2.2 HAZARDOUS OPERATIONS**

- 2.2.1 No person shall operate a balloon in a manner that creates a hazard to other persons or property.
- 2.2.2 No person shall allow an object to be dropped from a balloon if such action creates a hazard to other persons or property and unless permitted by the GCAA.

### **2.3 DAYLIGHT OPERATIONS**

Unless specifically authorized by the GCAA, no person shall operate a balloon except between the hours of sunrise and sunset.

### **2.4 OPERATIONS NEAR OTHER AIRCRAFT; RIGHT OF WAY RULES**

- 2.4.1 Balloons shall have right of way from other powered aircraft, gliders and airships.
- 2.4.2 A balloon shall not be operated in such proximity to other aircraft as to create a collision hazard.
- 2.4.3 Nothing in these rules shall relieve the pilot in command of a balloon from the responsibility of taking such action as will best avert collision.

### **2.5 OPERATIONS OVER CONGESTED AREAS**

Unless specifically authorized by the GCAA, no person shall operate a balloon over any congested area of a city, town, or settlement, or over any open-air assembly of persons.

## **2.6 OPERATIONS IN CONTROLLED AIRSPACE**

No person shall operate a balloon within Controlled Airspace, unless that person has prior authorisation from the ATS (Air Traffic Service) facility having jurisdiction over that airspace and the balloon has appropriate two way communications equipment and a Mode C transponder.

## **2.7 OPERATIONS IN PROHIBITED, RESTRICTED OR DANGER AREAS**

2.7.1 No person shall operate a balloon in a prohibited area at any time.

2.7.2 No person shall operate a balloon within a restricted area or danger area unless the controlling authority of the area concerned has authorized that operation or area is inactive.

## **2.8 HEIGHT LIMITATIONS**

2.8.1 Unless specifically authorized by the GCAA, no person may conduct free flight operations below 500 feet above ground level unless taking off or landing except within the confines of a GCAA approved area.

2.8.2 Unless specifically authorized by the GCAA, no person shall fly above 10,000 feet AMSL.

## **2.9 VISUAL REFERENCE**

No person shall operate a balloon on free flight operations except with visual reference with the surface, clear of cloud, with a minimum cloud ceiling of 1000 feet above ground level, and a minimum visibility of 3 kilometres.

## **2.10 OPERATIONS OVER WATER**

Unless specifically authorized by the GCAA, no person may operate a balloon over water.

## **2.11 OTHER REQUIREMENTS**

### **2.11.1 Liquor And Drugs**

No person shall operate as pilot of a balloon if that person has consumed alcohol within the preceding 12 hours prior to the specified reporting time for flight duty, or appears to be under the influence of intoxicating liquor, or using any drug that affects his or her faculties in any way contrary to safety.

### **2.11.2 Exception To Operating Requirements**

A person who wishes to pilot a balloon otherwise than in accordance with the operating rules set out in this Section, or in accordance with the organization's Operations Manual,



may apply to the GCAA for approval of the flight(s). Written application should be made from the organization detailing the proposed flight(s) at least 14 days prior to the proposed flight(s). The GCAA may approve the application and may specify conditions of the approval. Any such conditions shall be complied with.

### **SUB SECTION 3. PILOT IN COMMAND RESPONSIBILITIES**

#### **3.1 GENERAL**

- 3.1.1 No person shall operate a balloon with more than one pilot unless, when the flight is planned, the crew or the organization designates a pilot in command for each period of the flight. The pilot in command of a balloon is directly responsible for, and is the final authority as to, the operation of that balloon.
- 3.1.2 If a pilot in command of a balloon becomes aware of a defect in a balloon, aviation facility or service that may endanger safety, he or she shall report the matter to the organization.
- 3.1.3 Before commencing a flight, the pilot in command of a balloon operating under this Section shall take all reasonable steps to ensure that:
- (a) the balloon is in compliance with CAR Part V Airworthiness Regulations , insurance minimum requirement and is in compliance with the manufacturer's specifications;
  - (b) the maintenance log book has been checked;
  - (c) the balloon's maximum permitted lift shall not be exceeded and that the balloon's flight performance will enable the balloon to undertake the flight with safety having regard to the prevailing weather conditions, terrain, navigation, the available departure area, gross weight and load distribution;
  - (d) all instruments and equipment required for the flight are securely fitted to, or provided in the balloon, are functioning properly, and are adjusted correctly;
  - (e) the balloon is carrying enough fuel for the flight, including allowance for any possible alternative course which may be required;
  - (f) a load sheet has been prepared;
  - (g) any passenger is given adequate information in regard to any emergency procedures and emergency equipment used in conjunction with the balloon;
  - (h) all ground-handling personnel are appropriately trained.
  - (i) The launch and landing areas are suitable.
  - (j) Survival equipment with adequate amount of water for each individual

#### **3.2 AERODROMES**

- 3.2.1 The use of an aerodrome does not confer any rights under UAE civil law and the pilot should take all reasonable steps to ensure approval is granted from the owner of the site before operating.
- 3.2.2 The pilot in command of a balloon, shall not permit the balloon to take off from, or

land at, an aerodrome unless:

- (a) the site, is suitable for the taking off and/or landing of the balloon; and
- (b) the balloon can take off and/or land safely, having regard to the prevailing surface and weather conditions, and any other relevant circumstances.

3.2.3 An aircraft shall not land at, or take-off from any place unless the place is suitable for use as an aerodrome for the purpose of landing and taking off of aircraft in safety, having regard to all circumstances, including the prevailing weather conditions.

### **3.3 REFUELLING**

3.3.1 The organization or pilot in command, or any other person refuelling an balloon, shall ensure that the correct grade of fuel, as specified by the balloon or in approved documents, is used when replenishing the fuel in a balloon.

3.3.2 Any person refuelling a balloon shall do so in accordance with established safe practices and requirements for handling of flammable substances.

### **3.4 TRAINING AND RECENT EXPERIENCE**

3.4.1 The Pilot must be trained on initial balloon class, category or type training within an approved training organization.

The holder of the licence shall not fly as pilot in command of a balloon unless he/she has conducted, as pilot in command or pilot in command under supervision, at least 5 flights each of not less than 5 minutes duration, within the preceding 13 months.

### **3.5 ADDITIONAL RESPONSIBILITY OF PILOT AND OTHER STAFF**

The Manual must state the appointment and responsibilities of the Chief Pilot and Operations Manager. In a small company these posts may be combined. It is important that operating staff should be made fully aware of the overriding responsibility and the ultimate authority of the pilot in command. Operations Manuals must state that, in order to secure the safety of a particular flight, the pilot in command is authorised to apply greater safety margins (e.g. higher fuel reserves, terrain clearance standards or lower wind speed limits) than those specified by the operator for normal operations. In defining the duties of the pilot in command, the operator must include documentation and or instructions on:

- a) pre-flight briefing of ground crew;
- b) The briefing of passengers on emergency procedures and equipment (including, where appropriate, suitable clothing, lifejackets, safety belt and protective headgear).
- c) Company policy on the carriage of children and aged or inform or handicapped passengers who is not in the position to hold their own weight in case of bounce landing should be stated;
- d) the responsibility for supervising refuelling and for ensuring that tanks and hoses are secure and free of leaks;
- e) The responsibility for ensuring the correct completion of the Technical Log, both before and

after flight.

- f) The responsibility for supervising the loading of the balloon.
- g) Company policy on the use of crew restraint harness and protective headgear.

## **SUB SECTION 4. BALLOON SERVICEABILITY REQUIREMENTS**

### **4.1 GENERAL**

No person may operate a balloon unless it is in compliance with CAR PART V Airworthiness regulations.

### **4.2 DAMAGE AND DEFECTS**

The pilot in command of a balloon shall report any damage or defects affecting safety of flight to the organization.

- (a) The pilot in command shall ensure that an entry is made in the maintenance / technical logbook describing the damage or defect.
- (b) The owner of a balloon shall not permit the balloon to be flown if not airworthy or not in compliance with manufacturer's specifications.
- (c) The organization shall not permit a member to operate a balloon if it is not considered airworthy or not in compliance with manufacturer's specifications.
- (d) The organization, once aware of, or advised of any damage or defect, shall ensure an entry is made in the maintenance logbook.
- (e) Any damage or defect shall be endorsed in the maintenance logbook once repaired and declared serviceable for flight.

### **4.3 MAINTENANCE / TECHNICAL LOG BOOKS**

Refer to Technical Log paragraph in CAR PART V Chapter 5. Airworthiness Regulations

### **4.4 FOREIGN REGISTERED BALLOONS**

A foreign registered balloon may be approved by the GCAA to operate in the UAE for a special event.

#### **GM to 4.4 Special events**

Special events, is an event that carried out by organiser for competition or group flying that can be applied through GCAA flight operations. or other individual balloon event such as customer demonstration or similar purpose can be applied through GCAA Foreign operator section.

## **4.5 OPERATIONS MANUAL**

- 4.5.1 Any individual, operator or organization shall be required to have a GCAA approved Operations Manual and for other organization who operate in UAE shall submit their Operations manual for approval or acceptance.
- 4.5.2 An operator/organization shall provide the GCAA with a copy of the Operations Manual together with all amendments and/or revisions, for review and approval. The operator shall incorporate in the Operations Manual such mandatory material as the GCAA may require.
- 4.5.3 An operator/organization shall provide, for the use and guidance of operations personnel concerned, an Operations Manual. The Operations Manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up-to-date. All such amendments or revisions shall be issued to all personnel that are required to use this Manual.
- 4.5.4 Every person provided with an Operations Manual shall keep it up-to-date with amendments or revisions supplied by the operator.
- 4.5.5 Each crew member shall have readily available during flight a copy of those parts of the Operations Manual that relate to his duties.

## **SUB SECTION 5. SPECIFIC OPERATING PROCEDURES**

### **5.1 GENERAL**

Free balloons shall only be operated in areas approved in writing. These areas shall be approved by the appropriate DCA and may also require municipal and military (UAE Armed Forces / GHQ and or Police) approvals as part of the application to the GCAA. Tethered balloon operations within a built up area require GCAA approval. Tethered balloon operations outside built up areas may be conducted with prior notification to the GCAA provided that the operation is approved by the owner and relevant authorities and in compliance with CAR PART VIII Airspace User Requirement

#### **5.1.1 Flight Near Power Lines**

Where a balloon is approaching an electricity transmission cable, the pilot shall fly the balloon so as to maintain level or climbing flight whilst within 30 metres of the cable, and shall cross the cable at a safe height having regard to the conditions and the voltage carried by the cable. The pilot shall also consider the possibility of a wind reversal at very low level when descending or landing after crossing an electricity cable.

#### **5.1.2 Launching and Landing Areas**

##### **5.1.2.1 General**

A launching or landing area shall not be situated within any area, wherein the density of aircraft movements, or congregation of persons, makes it undesirable in the interests of safety to use that area as a manned balloon launching or landing area.

The pilot in command shall not launch or land unless persons, animals, vehicles or other objects which could constitute a hazard, except those persons and vehicles essential for the ground handling of the balloon, are clear of the launching or landing area.

NOTE: Spectators at a ballooning event at which launch marshals are appointed, are not considered to pose a hazard.

##### **5.1.2.2 Launching Area**

- (a) Any launching area shall be so located, and of such dimensions that under the weather conditions prevailing at the time of launch:
- (b) there is no structure, building or tree within one balloon envelope-diameter upwind or crosswind of the balloon basket or, where there is no ground wind, within one balloon envelope diameter in any direction;
- (c) other than fences or soft vegetation there is no structure, building or tree located downwind of the balloon which cannot be avoided during the launch by at least 30 feet vertically;
- (d) there is no electricity power line within two balloon envelope diameters upwind or crosswind of

the balloon or, where there is no ground wind, within two balloon envelope diameters in any direction.

- (e) there is no electricity power line located downwind of the balloon, which cannot be avoided after launch by at least 100 feet vertically.

NOTE: This does not imply that the balloon must be flown so as to avoid downwind obstacles by the margins stated.

### **5.1.2.3 Landing Area**

Any landing area (including its approach path) should be so located and of such dimensions that the balloon can be landed and, where applicable, deflated without risk of injury to the occupants of the balloon or members of the public on the ground and without risk of damage to livestock or property. In particular:

- (a) No electricity transmission cable should exist on the approach (upwind) side of the landing area, which cannot be crossed in level or climbing flight at a safe height having regard to the conditions prevailing at the time and the voltage carried by the cable.
- (b) No electricity transmission cable should be located within 2 envelope diameters of the point at which the pilot intends the balloon to be landed.
- (c) Ground handling lines should not be used within 1 envelope diameter of electricity transmission cables.
- (d) No obstacle other than fences, small trees or soft vegetation should be located on the approach (upwind) side of the balloon landing site within 1 balloon envelope diameter of the point at which the pilot intends the balloon to be landed.

### **5.1.3 Pilot Responsibilities**

The pilot in command, before using a manned balloon launching or landing area, should take all reasonable steps to ensure that the physical specifications are met in full. In particular, he/she should ensure that:

- (a) the surface of the launching or landing area is suitable prior to each launch and landing;
- (b) a suitable means of determining the wind velocity is available; and
- (c) the balloon can be safely manoeuvred clear of any obstacles.

## **5.2 Balloon Flight Over Populated Areas**

### **5.2.1 General**

All flights over or near populated areas require GCAA approval and military / GHA Armed Forces and or municipality / Site owner.

Once approved, flights are permitted to take-off from and land at suitable locations within a populated area, and, except during take-off and landing, must not fly within a radius of 300 metres of

any city, town or populated area below 1000 feet above ground level.

### **5.2.2 Fuel Reserves**

Fuel reserves to be carried when over flying populated areas should be greater than for areas with a wider choice of landing areas, as a suitable landing area may not be available at the time a pilot has planned to land.

### **5.2.3 Take-off**

If the flight path of the balloon in the first few minutes after take-off will take it over any area of residential or occupied commercial buildings, the pilot should fly the balloon so as to maintain a positive rate of climb whilst over that area or approaching it within 300 metres. In any event, the pilot should ensure that the balloon either reaches the prescribed 1000 ft minimum height within 5 minutes of taking-off, or clears the lateral boundaries of the populated area and a 300 metre buffer around it within that time.

### **5.2.4 Landing**

If a landing is not planned within or close to a populated area, the pilot should not descend below 1000 feet until the balloon is clear of the populated area and a 300 metre buffer area surrounding it. If a landing is planned at a site which lies within a populated area and its surrounding 300 metres buffer area, descent to the landing site and manoeuvring to use wind currents below 1000 feet may commence over the populated area. However, to avoid undue disturbance to residents, the pilot should not descend below 300 feet above the highest point of any building or structure within a 300 metre radius of the balloon until either:

- (a) the balloon is within 1000 metres of the intended landing point, or
- (b) the pilot anticipates reaching the landing site within 5 minutes, whichever will occur later.

In the event that an approach to a landing site in a populated area is aborted, the pilot should fly the balloon to at least 300 feet above obstacles unless an alternative landing site is immediately available. A pilot should avoid prolonged manoeuvring below 300 feet.

The pilot should not descend below the level of obstacles on the downwind side of a landing site if the landing is not assured unless either the approach can safely be aborted and the obstacles cleared by the distances prescribed for a suitable launch site, or a competent ground crew is present to assist the pilot, for example by use of a ground handling line.

### **5.2.5 Pre-flight Preparation**

Prior to operate the balloon, it is mandatory that all operator obtain and preserve accurate weather report, preservation of weather report shall be kept within 24 months.

### **5.2.6 GPS-Equipment**

GPS equipment shall be used to record all balloon movements; the GPS shall be capable to record position information (lateral and vertical) within specified period and downloaded as well as kept for 24 months.

## **SUB SECTION 6. AIRWORTHINESS REQUIREMENTS**

Refer to CAR PART V Airworthiness Regulations

## **SUB SECTION 7. PENALTIES AND CONTRAVENTIONS**

In the case of any contravention of a provision of these Regulations, the GCAA may take the following action:

- (a) revoke, or suspend for a specified period of time, any approval granted to a ballooning organization.
- (b) forbid the pilot in command of the balloon from flying for a specified period of time or permanently.
- (c) ground the balloon for a specified period of time.
- (d) these provisions shall be applied without prejudice to any other UAE law.

## **SUB SECTION 8. SAFETY MANAGEMENT SYSTEM**

### **8.1 GENERAL**

The organisation shall establish, implement and maintain a management system that includes:

- (1) clearly defined lines of responsibility and accountability throughout the organisation, including a direct safety accountability of the accountable manager;
- (2) a description of the overall philosophies and principles of the organisation with regard to safety, referred to as the safety policy;
- (3) the identification of aviation safety hazards entailed by the activities of the organisation, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness;
- (4) maintaining personnel trained and competent to perform their tasks;
- (5) documentation of all management system key processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;
- (6) a function to monitor compliance of the organisation with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary; and
- (7) any additional requirements that are prescribed in the relevant subparts of this regulation or other applicable GCAA regulations.

The management system shall correspond to the size of the organisation and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.

### **GM to 8.1**

The following requirements highlight the minimum requirement for SMS, for further guidance the operator may refer to CAR PART X. SMS.



## **Appendix 1 to 1.3.5 The Operations manual**

The purpose of the Operations Manual is to demonstrate compliance with CARs and to provide all personnel involved in balloon operations with guidance and procedures to ensure safety in all phases of the operation.

Flight Manual information may be incorporated into the Operations Manual, provided this is approved by the GCAA. The operator/organization is responsible for ensuring that all such information is kept up-to-date on a regular basis and not to exceed 2 years.

Each copy of the Operations Manual should normally bear a serial numbers, and a list of holders must be maintained by the person responsible for issuing amendments. Where this system is not used, an operator/organization should have satisfactory alternative arrangements for controlling the issue and amendment of manuals. Each manual should bear a title and list of contents, giving a clear indication of its scope.

An operator should ensure that the Operations Manual contains the following:

### **A. GENERAL/BASIC**

#### **0 ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL**

##### **0.1 Introduction**

- (a) A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable Air Operator Certificate/Authorization.  
List the element of operations manual that requires approval.
- (b) A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.
- (c) A list and brief description of the various parts, their contents, applicability and use.
- (d) Explanations and definitions of terms and words needed for the use of the manual.

##### **0.2 System of amendment and revision**

The minimum paragraphs are as follows:

- (a) Details of the person(s) responsible for the issuance and insertion of amendments and revisions.
- (b) A record of amendments and revisions with insertion dates and effective dates.
- (c) A statement that handwritten amendments and revisions are not permitted except in situations requiring immediate amendment or revision in the interest of safety.
- (d) A description of the system for the annotation of pages and their effective dates.
- (e) A list of effective pages.
- (f) Annotation of changes (on text pages and, as far as practicable, on charts and diagrams).
- (g) Temporary revisions.

(h) A description of the distribution system for the manuals, amendments and revisions.

## **1 ORGANISATION AND RESPONSIBILITIES**

### **1.1 Organisational structure.**

A description of the organisational structure including the general company organigram and operations department organigram. The organigram must depict the relationship between the Operations Department and the other Departments of the company. In particular, the subordination and reporting lines of all Divisions, Departments etc, which pertain to the safety of flight operations, must be shown.

### **1.2 Nominated postholders.**

The name of each nominated postholder including a description of their function and responsibilities must be included.

### **1.3 Responsibilities and duties of operations management personnel.**

A description of the duties, responsibilities and authority of operations management personnel pertaining to the safety of flight operations and the compliance with the applicable regulations.

### **1.4 Authority, duties and responsibilities of the commander.**

A statement defining the authority, duties and responsibilities of the commander.

### **1.5. Duties and responsibilities of crew members other than the commander.**

## **2 OPERATIONAL CONTROL AND SUPERVISION**

### **2.1 Supervision of the operation by the operator.**

A description of the system for supervision of the operation by the operator. This must show how the safety of balloon operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items must be described:

- (a) Licence and qualification validity;
- (b) Competence of operations personnel; and
- (c) Control, analysis and storage of records, flight documents, additional information and data.

### **2.2 System of promulgation of additional operational instructions and information.**

A description of any system for promulgating information which may be of an operational nature but is supplementary to that in the Operations Manual. The applicability of this information and the responsibilities for its promulgation must be included.

### **2.3 Safety Management System.**

A description of the main aspects of the flight safety programme.

### **2.4 Operational control.**

A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety.

### **2.5 Powers of the Authority.**

A description of the powers of the Authority and guidance to staff on how to facilitate inspections by Authority personnel.

### **3 QUALITY SYSTEM**

A description of the quality system adopted including at least:

- (a) Quality policy;
- (b) A description of the organisation of the Quality System; and
- (c) Allocation of duties and responsibilities.

### **4 CREW COMPOSITION**

#### **4.1 Crew Composition.**

An explanation of the method for determining crew compositions taking account of the following:

- (a) The responsibility of the ground crew and flight crew
- (b) The area and type of operation being undertaken;
- (c) The obstacle and area limitation;
- (d) The minimum crew requirement and flight duty period planned;
- (e) Experience (total and on type), recency and qualification of the crew members;

### **5 QUALIFICATION REQUIREMENTS**

5.1 A description of the required licence, rating(s), qualification/competency (e.g. for routes and area of operation), experience, training, checking and recency for operations personnel to conduct their duties.

5.2 Flight crew

5.3 Ground crew.

5.4 Training, checking and supervision personnel.

### **6 CREW HEALTH PRECAUTIONS**

6.1 Crew health precautions. The relevant regulations and guidance to crew members concerning health including: Psychoactive substances; Sleeping tablets; etc.

### **7 FLIGHT TIME LIMITATIONS**

7.1 Flight and Duty Time Limitations and Rest Requirements.

The scheme developed by the operator at least covering maximum flight time per day proposed by operator acceptable by the GCAA.

7.2 Exceedances of flight and duty time limitations and/or reductions of rest periods. Conditions under which flight and duty time may be exceeded or rest periods may be reduced and the procedures used to report these modifications.

### **8 OPERATING PROCEDURES**

8.1 Flight Preparation Instructions.

As applicable to the operation:

- 8.1.1 Minimum Flight Altitudes. A description of the method of determination and application of minimum altitudes including: A procedure to establish the minimum altitudes considering visibility and obstacle.
- 8.1.2 Criteria and responsibilities for the authorisation of the use of aerodromes taking into account the notification of area if the limit is exceeded, the reporting requirement to the relevant authority
- 8.1.3 En-route Operating Minima, instructions for route selection with respect to the availability of surfaces which permit a safe forced landing.
- 8.1.4 Interpretation of meteorological information. Explanatory material on the decoding of MET forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions.
- 8.1.5 Determination of the quantities of fuel carried.

#### **8.1.5.1 Requirements**

The total quantity of fuel carried on board the balloon must be sufficient for the intended flight and must include a safe margin for contingencies. The manner in which the amounts are calculated and records to be made must be specified. Minimum fuel remaining on landing must be stated. Fuel planning tables must be provided for all balloons. The tables must take account of the size of the balloon and the duration of the intended flight and should refer to the conditions for which the figures apply.

#### **8.1.5.2 Monitoring Fuel on Board**

There must be instructions for ascertaining before departure that the amount of fuel on board meets the pilot in command's requirements. There must also be instructions for ensuring that if, in flight, the amount of fuel calculated to remain at the point of intended landing is likely to become less than any minimum quantity specified, this fact becomes apparent at an early stage. Procedures for changing tanks and for isolating and evacuating the fuel system on landing must be stated. Before signing the Technical Log page, the pilot in command must be satisfied that the correct quality and quantity of fuel is on board and that it has been loaded in accordance with instructions.

#### **8.1.6 Mass and Centre of Gravity.**

The general principles of mass and centre of gravity including: Methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;

##### **8.1.6.1 Loading**

It must be stated that the maximum permitted lift for the balloon must not be exceeded. The following precautions must be observed:

- (a) Actual weights must be used for all passengers. It may be necessary in case of doubt to verify an individual passenger's weight;
- (b) account must be taken of equipment not included in the basic weight of the balloon,
- (c) weights used for fuel and empty cylinders must be checked against the type of tank in use;
- (d) care must be taken to specify and employ a common unit of weight throughout; and
- (e) The maximum permitted number of occupants for the type of balloon must be specified, together with the maximum number in any one compartment.

#### 8.1.6.2 Mass and balance document

The load sheet must be described in the Operations manual. It must account for all items of the laden weight. Although they may not always be specified individually, the following are examples of items to be included;

- (a) fuel;
- (b) balloon library, unless these items are included in the basic weight;
- (c) passengers' baggage/ belongings;
- (d) safety and emergency equipment; and
- (e) all other items of removable equipment including removable radios.
- (f) names and actual weights of passengers.

#### 8.1.7 ATS Flight Plan.

Procedures and responsibilities for the preparation and submission of the air traffic services flight plan or notifying relevant authority.

#### 8.1.8 Operator's Balloon Technical Log.

The responsibilities and the use of the operator's Balloon Technical Log must be described, including samples of the format used.

#### 8.1.9 List of documents, forms and additional information to be carried.

### 8.2 Ground Handling Instructions

#### 8.2.1 Fuelling procedures. A description of fuelling procedures, including:

- (a) Safety precautions during refuelling and defuelling;
- (b) Refuelling and defuelling when passengers are embarking, on board or disembarking; and

#### 8.2.2 Balloon, passengers and cargo handling procedures related to safety.

A description of the handling procedures to be used when allocating passenger distribution and embarking and disembarking passengers and when loading and unloading the Balloon. Further procedures, aimed at achieving safety whilst the Balloon is on the ramp, must also be given. Handling procedures must include:

- (a) Criteria of passenger that can be carried ,which must be able to restrain them self during landing;
- (b) Loading and securing of items in the Balloon;
- (c) Positioning of ground equipment; fire extinguishers and mooring lines
- (d) Safety on the ramp, including fire prevention, blast, sand, dust and sand blast clear areas;
- (e) Servicing of Balloons;

#### 8.2.3 Procedures for the refusal of embarkation.

Procedures to ensure that persons who appear to be intoxicated or who demonstrate by manner or physical indications that they are under the influence of Physchoactive substances, are refused embarkation.

### 8.3 Flight Procedures

#### 8.3.1 VFR/IFR Policy.

- A description of the policy for allowing flights to be made under VFR, or of requiring flights to be made under IFR, or of changing from one to the other.
- 8.3.2 Navigation Procedures.  
A description of all navigation procedures relevant to the type(s) and area(s) of operation. Consideration must be given to:
- 8.3.3 Altimeter setting procedures including use, where appropriate, of
- 8.3.4 Altitude alerting system procedures
- 8.3.6 Policy and procedures for the use of Transponder
- 8.3.7 Policy and procedures for in-flight fuel management
- 8.3.8 Adverse and potentially hazardous atmospheric conditions. Procedures for operating in, and/or avoiding, adverse and potentially hazardous atmospheric conditions including:
- (a) Thunderstorms;
  - (b) Turbulence;
  - (c) Sand storms;
  - (d) Mountain waves; and
  - (e) Significant Temperature inversions.
- 8.3.9 Wake Turbulence.  
Wake turbulence separation criteria, taking into account Balloon types, wind conditions and runway location.
- 8.3.10 Crew members at their stations.  
The requirements for crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interest of safety.
- 8.3.11 Use of safety belts for crew and passengers.  
The requirements for crew members and passengers to use safety belts and/or harnesses during the different phases of flight or whenever deemed necessary in the interest of safety
- 8.3.12 Incapacitation of crew members.  
Procedures to be followed in the event of incapacitation of crew members in flight. Examples of the types of incapacitation and the means for recognising them must be included.
- 8.3.13 Safety Requirements.  
Procedures covering:
- (a) Cabin preparation for flight, in-flight requirements and preparation for landing including procedures for securing the passenger;
  - (b) Procedures to ensure that passengers are located where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the Balloon;
  - (c) Procedures to be followed during passenger embarkation and disembarkation; and
  - (d) Procedures when changing fuel cylinder with passengers embarking, on board or disembarking.
  - (e) Smoking on board.
  - (f) Carrying photographic equipment.

#### 8.3.14 Passenger briefing procedures.

The contents, means and timing of passenger briefing have to be provided in this section including when passenger approaching the balloon, precautions to be observed in flight, and before and during the landing, together with emergency procedures. Written instructions for pilots must be provided.

#### 8.4 Use of the Minimum Equipment and Configuration Deviation List(s)

#### 8.5 Non revenue flights. Procedures and limitations for:

Training flights; Test flights; and Demonstration flights including the kind of persons who may be carried on such flights.

Information on the following matters should be provided in a form suitable for use as immediate reference in day-to-day operations.

- (a) The effect on essential systems of serious faults. Information to be provided may vary with the type of balloon and should be in a readily identifiable section of the Manual:
- (b) Operational guidance on the actions to be taken in the event of a malfunction;
- (c) procedure for carrying out the maintenance Check A, as required by the approved maintenance schedule; and for
- (d) the replenishment of fuel tanks by re-fuelling from a bulk supply and/or from cylinders.

## 9 DANGEROUS GOODS AND WEAPONS

Information, instructions and general guidance on the transport of dangerous goods including flammable materials, sharp objects, bulky object etc.

## 10 SECURITY

10.1 Security instructions and guidance of a non-confidential nature which must include the authority and responsibilities of operations personnel. Policies and procedures for handling and reporting crime on board such as unlawful interference, sabotage, bomb threats, and hijacking must also be included.

10.2 A description of preventative security measures and training.

Note: Parts of the security instructions and guidance may be kept confidential.

## 11 HANDLING, NOTIFYING AND REPORTING OCCURRENCES

Procedures for the handling, notifying and reporting occurrences, either manual form or ROSI reporting system.

Accidents and Incidents are to be reported to the GCAA in the most expeditious manner and in accordance with the directives provided in CARs.

ROSI (Reporting Of Safety Incident) online should be used on any reportable occurrences. The following occurrences should be reported

- Any incident that have impact on personnel injury either in the balloon or outside the balloon
- Any impact with surface other than planned landing area such as trees, buildings, fences, static

or dynamic object

- Any human factor related issue such as fatigue, health, etc.

#### Specific Procedures

Provision must be made for all operating staff to have ready access to the prescribed requirements for the reporting and investigation of accidents and incidents. In particular, operating staff should be familiar with the definitions used in the legislation; the duty to furnish information and the rules governing the removal of damaged aircraft. Instructions must be issued in the Operations Manual regarding the reporting to the Regulatory Authority of the country concerned of any accidents, which occur overseas, and the action necessary to prevent removal or interference with any part of the balloon without proper permission. This is in addition to the pilot in command and/or operator's existing responsibility to inform the GCAA.

## **12 RULES OF THE AIR**

Rules of the Air including:

- (a) Communication procedures including COM-failure procedures;
- (b) Standard Navigation procedures including use of GPS
- (c) The circumstances in which a radio listening watch is to be maintained;
- (d) Time system used in operation;
- (e) ATC clearances, adherence to flight plan and position reports;
- (f) Visual signals used to warn an unauthorised Balloon flying in or about to enter a restricted, prohibited or danger area;
- (g) Procedures for pilots observing an accident or other concerns, e.g. mass animals deads, animal lost etc.;
- (h) The ground/air visual codes for use by survivors, description and use of signal aids; and
- (i) Distress and urgency signals.

## **B BALLOON OPERATING MATTERS – TYPE RELATED AND STANDARD OPERATING PROCEDURES (SOP)**

### **0 GENERAL INFORMATION AND UNITS OF MEASUREMENT**

0.1 General Information (e.g. Balloon dimensions), including a description of the units of measurement used for the operation of the Balloon type concerned and conversion tables.

### **1 LIMITATIONS**

- 1.1 A description of the certified limitations and the applicable operational limitations including:
- (a) Certification status;
  - (b) Passenger configuration for each Balloon type including a pictorial presentation;
  - (c) Types of operation that are approved;
  - (d) Crew requirements;



- (e) Mass and centre of gravity;
- (f) Wind limits especially when it exceed 8 knots
- (g) Performance limitations for various temperature;
- (h) landing slope and obstacles acceptable for safe landing;
- (i) Balloon contamination or defects; and
- (j) System limitations.

## **2 NORMAL PROCEDURES**

2.1 The normal procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists, briefing, applicable standard callouts and a statement covering the necessary coordination procedures between flight and ground crew. The following normal procedures and duties must be included:

- (a) Pre-flight preparation
- (b) Ground crew coordination: including Retrieve procedure. Recovery on to a trailer.
- (c) Area familiarisation and expected landing site based on wind weather report, including Identification of overhead lines and other obstructions;
- (d) Pre-departure; passenger briefing and ground crew
- (e) Start up preparation: GPS, Transponder and notification relevant agencies;
- (f) Take-Off, Climb and cruise;
- (g) Approach, Landing preparation and briefing;
- (h) Missed Approach; condition that warrant missed approach
- (i) Normal Landing;
- (j) Post Landing;

## **3 ABNORMAL AND EMERGENCY PROCEDURES**

3.1 The abnormal, emergency procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists and a statement covering the necessary coordination procedures between flight and cabin crew. The following abnormal and emergency procedures and duties must be included:

- (a) Crew Incapacitation;
- (b) Fire and Smoke Drills;
- (c) Exceeding structural limits such as hard landing;
- (d) Distress Communications and alerting ATC to Emergencies;
- (e) Engine failure;
- (f) System failures;
- (g) Guidance for Diversion in case of Serious Technical Failure;
- (h) Windshear;
- (i) Emergency Landing/Ditching;

## **4 PERFORMANCE**

4.0 Performance data must be provided in a form in which it can be used without difficulty.

4.1 Performance data. Performance material which provides the necessary data for compliance with the performance requirements prescribed in Balloon Manufacture Manual which must be included to allow the determination of:

- (a) Take-off climb limits – Mass, Altitude, Temperature;
- (b) Net flight path data for obstacle clearance calculation or, where applicable, take-off flight path;
- (c) Landing field length availability versus suitability

4.2 Additional Performance Data. Additional performance data where applicable including:

- (a) All engine climb gradients;
- (b) Drift-down data with engine failures;
- (c) Effect of de-icing/anti-icing fluids;
- (d) Flight with landing gear down;
- (e) For Balloons with 3 or more engines, one engine inoperative ferry flights; and
- (f) Flights conducted under the provisions of the CDL/damage permitted.

## **5 FLIGHT PLANNING**

5.1 Data and actions necessary for pre-flight and in-flight planning including factors such as duration and power settings.

5.2 The method for calculating fuel needed for the flight.

## **6 MASS AND BALANCE**

Instructions and data for the calculation of the mass and balance including:

- (a) Calculation system (e.g. Index system);
- (b) Information and instructions for completion of mass and balance documentation, including manual and computer generated types;
- (c) Limiting masses and centre of gravity for the types, variants or individual Balloons used by the operator; and
- (d) Dry Operating mass and corresponding centre of gravity or index.

## **7 LOADING**

Procedures and provisions for loading and securing the load in the Balloon.

## **8 CONFIGURATION DEVIATION LIST**

The Configuration Deviation List(s) (CDL), if provided by the manufacturer, taking account of the Balloon types and variants operated including procedures to be followed when a Balloon is being despatched under the terms of its CDL. This may include list of allowable damage in part of external balloon parts.

## **9 MINIMUM EQUIPMENT LIST**

The Minimum Equipment List (MEL) taking account of the Balloon categories operated and the type(s)/area(s) of operation. The MEL must include the communication and navigational equipment and take into account the required navigation performance for the route and area of operation.

## **10 SURVIVAL AND EMERGENCY EQUIPMENT**

A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated check list(s) must also be included.

## **11 EMERGENCY EVACUATION PROCEDURES**

- 11.1 Instructions for preparation for emergency evacuation including crew co-ordination and emergency station assignment.
- 11.2 Emergency evacuation procedures. A description of the duties of crew members of the crew for the rapid evacuation of an Balloon and the handling of the passengers in the event of a forced landing, ditching or other emergency.

## **12 BALLOON SYSTEMS**

A description of the Balloon systems, related controls and indications and operating instructions.

## **C ROUTE AND AERODROME INSTRUCTIONS AND INFORMATION**

- 1 Instructions and information relating to communications, navigation and aerodromes including minimum flight altitudes for each route to be flown and operating minima for each aerodrome planned to be used, including:
  - (a) Minimum flight level/altitude;
  - (b) Operating minima (wind and visibility)for departure, destination and alternate aerodromes;
  - (c) Communication facilities;
  - (d) landing data and aerodrome facilities;
  - (e) Approach, missed approach and departure procedures including noise abatement procedures;
  - (f) COM-failure procedures;
  - (g) Search and rescue facilities in the area over which the Balloon is to be flown;
  - (h) Information related to Search and Rescue
  - (i) A description of the aeronautical charts that must be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;
  - (j) Availability of aeronautical information and MET services;

## **D TRAINING**

- 1 Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight.
- 2 Training syllabi and checking programmes must include:
  - 2.1 For flight crew.
  - 2.2 For ground crew including;
    - (a) All relevant items prescribed in Subpart R (Transport of Dangerous Goods by Air); and
    - (b) All relevant items prescribed in Subpart S (Security).
  - 2.4 For operations personnel other than crew members (e.g. despatcher, handling personnel, personnel who receive / handle passenger etc.).
- 3 Procedures
  - 3.1 Procedures for training and checking.
  - 3.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards.
  - 3.3 Procedures to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means, are not simulated during commercial air transportation flights.
- 4 Description of documentation to be stored and storage periods.